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WATER SUPPLY OUTLOOK FOR WASHINGTON

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Prepared by

U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

Collaborating with

DEPARTMENT OF ECOLOGY STATE OF WASHINGTON

Data included in this report were obtained by the agencies named above in cooperation with the U.S. Forest Service, U.S. Geological Survey, National Park Service, and other Federal, State and Private organizations.

AS OF
FEB. 1, 1971

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters of key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	12417 Federal Building, Denver, Colorado 80202
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 970, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82601

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



WATER SUPPLY OUTLOOK FOR WASHINGTON

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

KENNETH E. GRANT

ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D.C.

|||||

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SPOKANE, WASHINGTON

In Cooperation with

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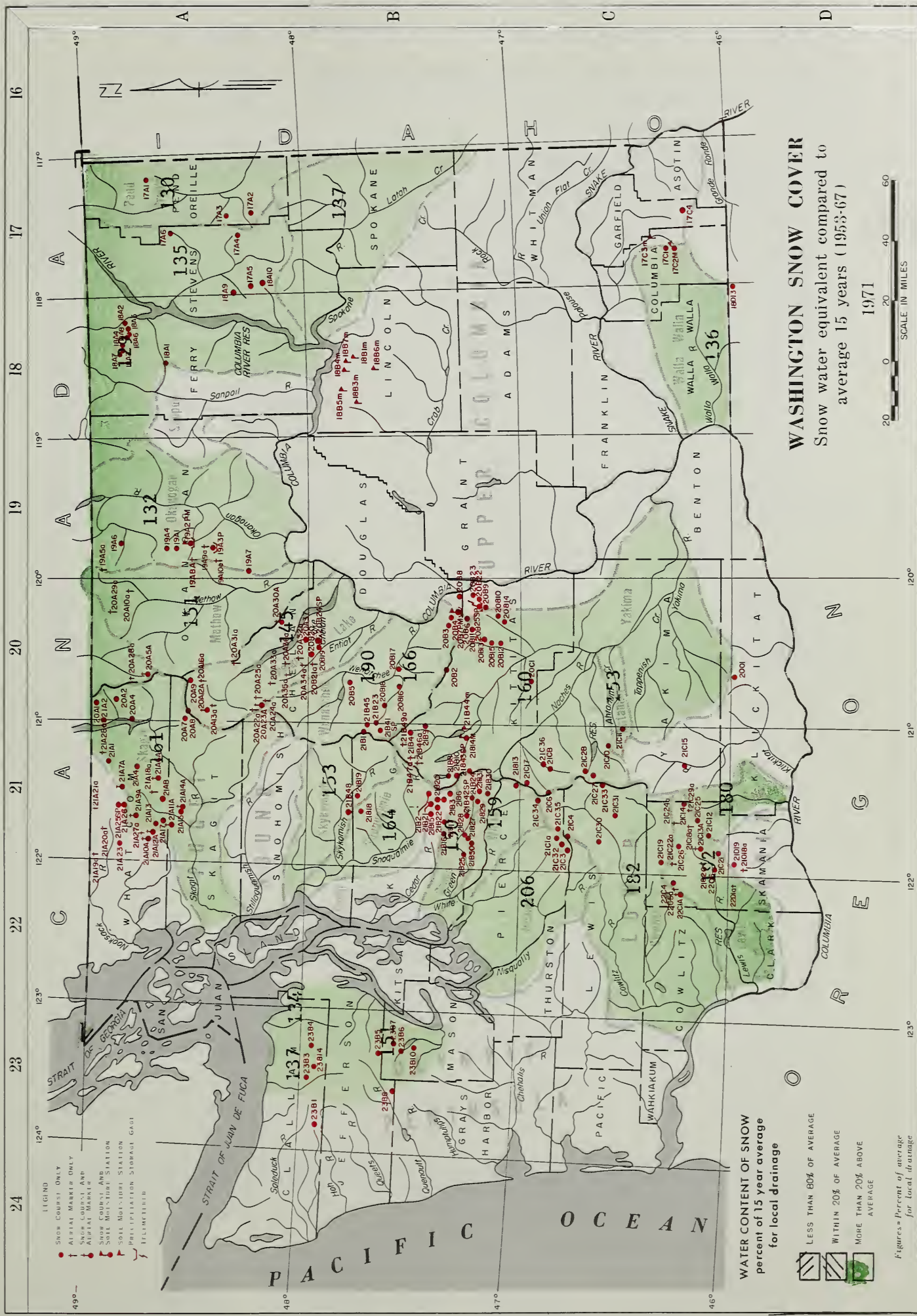
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STATE OF WASHINGTON

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Report prepared by

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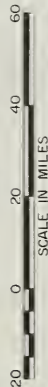
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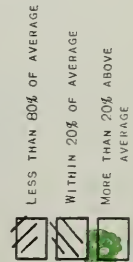
WASHINGTON SNOW COVER

Snow water equivalent compared to
average 15 years (1953-67)

1971



WATER CONTENT OF SNOW
percent of 15 year average
for local drainage



Figures = Percent of average
for local drainage

INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE					
Pend Oreille River					
Boyer Mountain	17A2	7	31N	43E	5250
Lunchgrass Meadow	17A1	24	37N	41E	5000
Winchester Creek	17A3	30	33N	43E	2970
Kettle River					
Boulder Road	18A2	36	39N	36E	1450
Burto Creek	18A3	28	39N	35E	4070
Cabin Creek	18A4	5	38N	36E	3170
Gait Creek	18A5	26	39N	35E	3595
Snow Caps Creek	18A6	3	38N	36E	2150
Snow Caps Trail	18A7	5	38N	36E	2720
Summit G. S.	18A8	20	39N	35E	4600
Colville River					
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chevelah	17A4	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4990
Toigo	18A10	6	29N	38E	3370
Sanpoil River					
Sherman Creek Pass	18A1	19	36N	35E	5350
Okanogan River					
Clark	19A8A	2	36N	23E	7000
Muckamuck	19A9A	20	36N	24E	6750
Nutton Creek No. 1	19A1	30	37N	24E	5700
Nutton Creek No. 2	19A4	19	37N	24E	6000
Payson	20A2A	32	40N	18E	4300
Park Creek	19A3P	18	35N	21E	4000
Rusty Creek	19A2PM	33	37N	24E	4500
Salmon Meadows	19A10A	15	35N	23E	6750
Scavenger Mtn.	19A6	30	39N	25E	2845
Tout's Coulee					
Methow River					
Billy Goat Pass	20A10A	10	38N	20E	6400
Dollar Watch	20A29A	8	39N	20E	7000
Harts Pass	20A5A	7	37N	18E	6500
Horseshoe Basin	19A5A	15	40N	23E	7000
Loup Loop	19A7	36	34N	23E	4650
Chelan Lake Basin					
Cloudy Pass	20A22A	12	31N	15E	6500
Greenwood Flat	20A25A	3	31N	16E	3540
Little Meadows	20A24A	8	31N	16E	5275
Lynn Lake	20A35A	18	31N	16E	5900
Park Creek Flat	20A15A	18	34N	16E	2220
Park Creek Ridge	20A12A	7	34N	16E	4600
Petersons	20A10A	3	34N	17E	3730
Rainy Pass	20A9	21	35N	17E	4780
Safety Harbor	20A30A	32	31N	20E	6300
War Creek Pass	20A31A	34	33N	18E	6500
Entiat River					
Brief	20B19	31	28N	19E	1600
Entiat Meadows	20A33A	28	31N	17E	4800
Entiat River Trail	20A34A	12	29N	17E	3150
fox Camp	20A36A	17	30N	18E	6510
Pope Ridge	20B20	22	29N	18E	4300
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	4300
Pugh Ridge	20A52A	34	30N	18E	6400
Shady Pass	20A37	20	29N	19E	6200
Snow Brushy	20A35A	21	30N	17E	3850
Tommy Creek	20B21A	10	28N	18E	5300
Wenatchee River					
Berne-Mill Creek	21B23	7	26N	15E	2925
Kerne-Mill Creek (New)	21B41SP	13	26N	14E	3240
Blewett Pass No. 2	20B2	35	22N	17E	4270
Chiwaukum G. S.	20B16	4	25N	17E	1810
Lake Wenatchee	20B5	33	27N	17E	1970
Leavenworth R. S.	20B17	1	24N	17E	1127
Merritt	20B18	4	26N	16E	2140
Stevens Pass	21B1	14	26N	13E	4070
Stevens Pass Sand Shed	21B45	12	26N	19E	3700
Trough #2	20B25SP	10	20N	20E	5310
LOWER COLUMBIA DRAINAGE					
Asotin Creek					
Spruce Springs	17C4	9	8N	42E	5700
Mill Creek					
Couse	17C3m	2	9N	35E	3370
Homestead	17C1	11	9N	40E	4030
Martin Springs (Helmets SW)	17C2M	23	9N	40E	4400
Walla Walla Diversion	18D13	22	6N	38E	2400
Klickitat River					
Satus Pass	20D1	21	6N	17E	4030
West Fork Cabin	21C15	23	9N	12E	3000
White Salmon River					
Cultus Creek	21C12	35	7N	8E	4000
Lewis River					
Blue Lake	21C22a	19	9N	8E	4800
Rob's Trail	21C21	25	8N	7E	2200
Calamity Ridge	22D1a	8	5N	5E	2500
Council Pass	21C18a	24	9N	9E	4200
Snake River					
Alpine Meadow	21B48	31	27N	9E	3500
Oiallie Meadows	21B2	19	22N	11E	3625
South Fork Tolt	21B18	26	26N	9E	1900
Snoqualmie River					
City Cabin	21B3	10	21N	10E	2390
Mr. Gardner	21B21	30	22N	10E	3300
Mr. Gardner Aux.	21B22	31	22N	10E	2500
Mr. Lindsay	21B16	3	22N	9E	2500
Mr. Washington	21B15	8	22N	9E	3000
Rex River	21B17	11	21N	9E	2400
South Fork Cedar	21B6	24	21N	10E	3000
Tinkham Creek	21B20	1	21N	10E	3400
Skykomish River					
Lake Elizabeth	21B19	33	26N	10E	2900
PUGET SOUND DRAINAGE					
Nisqually River					
Ghost Forest	21C4	23	15N	8E	4550
Longmire	21C5	29	15N	8E	2760
Paradise Park (New)	21C35	13	15N	8E	5050
Stem Glade	21C1	13	15N	8E	5050
White River					
Corral Pass	21B13	30	18N	11E	6000
White River Campground	21C34	4	16N	9E	
Green River					
Airstrip	21B24	18	20N	11E	1800
Charley Creek	21B25	27	21N	8E	1200
Cougar Mountain	21B42SP	21	21N	9E	3200
Grass Mountain No. 2	21B27	14	20N	8E	2900
Grass Mountain No. 3	21B28	12	20N	8E	2100
Lester Creek	21B29	36	20N	10E	3100
Lynn Lake	21B50	21	20N	8E	4000
Sawmill Ridge	21B31	5	19N	11E	4700
Snowshoe Butte	21B43SP	14	20N	11E	5000
Stampede Pass	21B10	25	21N	11E	3000
Twin Camp	21B30	18	19N	11E	4100
Cedar River					
City Cabin	21B3	10	21N	10E	2390
Mr. Gardner	21B21	30	22N	10E	3300
Mr. Gardner Aux.	21B22	31	22N	10E	2500
Mr. Lindsay	21B16	3	22N	9E	2500
Mr. Washington	21B15	8	22N	9E	3000
Rex River	21B17	11	21N	9E	2400
South Fork Cedar	21B6	24	21N	10E	3000
Tinkham Creek	21B20	1	21N	10E	3400
Skagit River					
Scaver Creek Trail	21A4	35	39N	12E	2200
Beaver Top	21A1	9	39N	12E	3680
Brown Pass	21A28a	26	40N	12E	6000
Devils Fork	20A4	34	38N	16E	5900
Freezout Creek Trail	20A1	14	40N	14E	3500
Freezout Meadows	20A2	8	40N	16E	5000
Lake Hozeom	21A2	19	40N	14E	2600
Meadows Cabins	20A8	29	36N	14E	1900
Thunder Basin	20A7	15	35N	14E	4200
Baker River					
Baker Pass	21A27a	1	37N	7E	4900
Dock Butte	21A11a	8	36N	8E	3800
Easy Pass	21A7A	19	39N	11E	5200
Jasper Pass	21A6A	17	38N	11E	5400
Komo Kulshan	21A17	31	37N	9E	800
Marion Lake	21A9A	23	38N	8E	3600
Mount Blum	21A18a	27	38N	10E	5800
Rocky Creek	21A12a	20	37N	8E	2100
Schreibers Meadow	21A10A	18	37N	8E	3400
S. F. Thunder Creek	21A14A	20	36N	9E	2200
Sulphur Creek	21A13	22	37N	8E	1600
Three Mile Creek	21A15	18	36N	9E	1600
Watson Lakes	21A8	25	37N	9E	14500
Nooksack River					
Bald Mountain	21A19a	7	40N	7E	1400
Canyon	21A20A	20	40N	8E	5100
Glacier Creek	21A23	9-10	38N	7E	3700
Panorama New	21A26	17	39N	9E	4300
Panorama Snow Pillow	21A25SP	17	39N	9E	4300
Twin Lakes	21A21a	16	40N	9E	5200
OLYMPIC PENINSULA					
Dungeness River					
Deer Park	2384	1	28N	5W	5200
Morse Creek					
Cox Valley	23814	29	28N	6W	
Elwha River					
Hurricane	2383	36	29N	7W	4500
Skokomish River					
Black and White	23B7	17	24N	5W	4200
Black and White Lakes	2386	16	24N	5W	4700
Four Stream	23810	1	23N	6W	3000
Home Sweet Home	2385	28	25N	5W	5200
Sundown Pass	2388	25	24N	7W	3900
Soleduck River					
Deer Lake	2381	14	28N	9W	3900

LEGEND
 21A7 SNOW COURSE ONLY
 21A7A SNOW COURSE AND AERIAL MARKER
 21A7M SNOW COURSE AND SOIL MOISTURE STATION
 21A7P SNOW COURSE AND PRECIPITATION STORAGE GAGE
 21A7SP SNOW COURSE AND PRECIPITATION STORAGE GAGE
 21A7P SNOW COURSE AND PRECIPITATION STORAGE GAGE
 21A7SP SNOW COURSE AND PRECIPITATION STORAGE GAGE

WATER SUPPLY OUTLOOK

State of Washington

February 1, 1971

* The water supply outlook for irrigation and power for the Columbia *
* Basin in Washington and its tributary areas can be considered very *
* good for this time of year. Snow surveys made in the state and ad- *
* jacent areas on the first of February show a snowpack that varies *
* from 29% above normal to 106% above. Recent high temperatures have *
* reduced low elevation snowpacks but had no adverse affects on the *
* middle and upper elevation areas except for ripening the snow. The *
* snow cover, as of this date, is more like that which is measured *
* on the first of April or the first of May, both in density and tex- *
* ture. It appears that the snow cover improves, percentagewise, in *
* a southerly direction. The snowpacks in the central area of the *
* state on both sides of the Cascades appear to be better than that *
* which has been measured in the British Columbia portion of the *
* basin. The main power reservoirs, generally, have more water than *
* normal for this time of year while the irrigation reservoirs have *
* less water in storage than normal. The power reservoirs on the *
* west side do not have the surplus that is present in Franklin D. *
* Roosevelt Lake. Runoff during January was greatly improved over *
* that which has been measured during the previous months throughout *
* the state and tributary areas. During January the greatest runoff *
* occurred from low elevation watersheds while many of the high ele- *
* vation areas have just started to recover from the record-low flows *
* of this past year. *

SNOW COVER

All of the watersheds in the Upper Columbia Basin have well above normal snowpacks for this time of year. The northeastern portion of the state, namely, the Pend Oreille and Kettle, appear to have the lowest snow cover, percentagewise, while the Yakima, Wenatchee, Entiat, have the greatest. On the lower Columbia all of the snow cover measurements indicate well above normal snowpacks with the White Salmon, Lewis and Cowlitz near the 200% mark. Variability in the Puget Sound area shows the southern area at 106% above normal and the remainder, White through the Skagit, near the 50% above range. On the Olympic Peninsula, Skokomish comes in at 51%; the Elwha-Dungeness area at 36% above. If normal conditions prevail for the remainder of the snow season more than adequate water will be available for all needs in the basin.

RESERVOIRS

The five reservoirs in the Yakima drainage have 534,200 acre-feet in storage as of February 1 compared to 626,000 acre-feet for the 1953-67 normal period. With the snowpack presently available, these reservoirs

will all fill and spill with the spring runoff. Franklin D. Roosevelt Lake, the key power reservoir, has well above normal amounts of water in storage and is near full as of February 1. Chelan Lake and Ross reservoirs have less water in storage this year compared to normal but greater when compared to last year at this time. The two smaller reservoirs in the Okanogan drainage, Conconully and Salmon, have well below normal amounts. These reservoirs should fill even under adverse subsequent conditions.

PRECIPITATION

Fall precipitation over the state and tributary areas was below normal in the Columbia portion in Canada as well as the central and north-central areas. Above normal precipitation occurred during this period over the rest of the state. For the winter period of November through December only the southeastern area had below normal precipitation although January rainfall was low in the northeastern portion as well.

SOIL MOISTURE

There are 12 soil moisture stations measured in the state. Five of these stations, in Lincoln County, in wheat land, indicate the soil mantle to be only 50% of field capacity as of February 1. The higher elevation soil moisture stations in the Okanogan drainage also have less than 50% of Capacity moisture in the mantle. In the Yakima, Walla Walla and Wenatchee drainages the soil mantle is wetted to near capacity as a result of recent low elevation melting and infiltration.

STREAMFLOW

Forecasts of streamflows are not made until March 1 but the indications are that normal to above streamflow will occur during the subsequent runoff period. With normal or above climatic conditions during this period the water supply picture will improve even more so. River flows during January were generally normal to above with many of the smaller streams peaking out near the last of the month. High flows from the Snake drainage during the month increased the main stem of the Columbia from 7% above normal above the confluence of the Snake to 43% above normal for The Dalles station. The dry, low flow conditions that have occurred from the Similkameen, Okanogan, Kettle and Upper Columbia areas seem to have been broken with near normal flows occurring in this area with the exception of the Okanogan and even this stream had a marked improvement over that which was measured during the previous months.

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of Washington stream basins presents the water content of the snow about February 1, 1971, as per cent of the same date in 1970 and 1969 and average of record.

Tributary Basin	No. of Courses Average	Years of Record	1971 Snow Water Expressed as percent of		
			1970	1969	1953-67 Avg.

UPPER COLUMBIA BASIN

Pend Oreille	5 - 11	7 - 34	146	96	130*
Kettle	14	5 - 31	149	89	129*
Colville	2 - 5	9 - 12	179	65	135*
Spokane	3	9 - 26	135	78	137*
Okanogan	25 - 27	4 - 33	141	107	132*
Methow	6	8 - 33	133	97	151*
Chelan	1	33	177	109	145
Entiat	1 - 8	4 - 10	142	122	190*
Wenatchee	8	3 - 26	134	108	166*
Yakima	16 - 21	3 - 49	123	107	160*
Ahtanum	1	29	106	85	153*

LOWER COLUMBIA

Mill Creek	2	16 - 17	--	53	136*
Klickitat	1	13	137	111	--
White Salmon	2	13	190	116	180*
Lewis	15 - 17	8 - 13	309	113	192*
Cowlitz	9 - 10	7 - 19	228	125	182*

PUGET SOUND

Nisqually	3 - 4	5 - 14	241	156	206*
White	1	19	180	139	159*
Green	5 - 9	9 - 24	202	79	150*
Snoqualmie	1	21	163	102	164*
Skykomish	1 - 2	3 - 26	154	105	153*
Skagit	5 - 8	13 - 23	197	117	161*
Nooksack	1	3	185	150	--

OLYMPIC PENINSULA

Skokomish	3 - 5	7 - 13	218	118	151*
Elwha	1	11	229	112	137*
Dungeness	1	17	165	109	134*

* Records of less than 15 years used on computation of averages.

RESERVOIR STORAGE - 1000 Acre Feet

BASIN or STREAM	RESERVOIR	USABLE ^{1/} CAPACITY	1971	Measured (February)		
				1970	1969	Normal*
<u>COLUMBIA</u>						
Spokane	Coeur d'Alene Lake	225.1	202.5	161.1	134.1	137.0
Columbia	Franklin D. Roosevelt Lk.	5232.0	5065.6	4449.4	2430.3	3812.5
Columbia	Banks Lake	761.8	712.2	597.3	714.9	494.0
Okanogan	Conconully Reservoir	13.0	5.3	7.0	4.3	5.6
Okanogan	Salmon Lake	10.5	2.1	7.8	6.4	8.6
Chelan	Lake Chelan	676.1	216.3	187.8	254.4	318.4
<u>YAKIMA</u>						
Yakima	Keechelus Lake	157.8	97.3	50.3	105.0	92.1
Kachess	Kachess Lake	239.0	175.3	166.9	194.0	172.2
Cle Elum	Lake Cle Elum	436.9	170.1	155.6	253.3	241.1
Bumping	Bumping Lake	33.7	5.3	9.1	4.2	9.9
Tieton	Rimrock Lake	198.0	86.2	75.9	135.7	111.3
<u>PUGET SOUND</u>						
Skagit	Ross Reservoir	1202.9	895.4	849.3	835.7	956.3
Skagit	Diablo Reservoir	90.6	84.4	83.6	82.6	85.6
Skagit	Gorge Reservoir	9.8	7.9	7.5	8.2	--

^{1/} Based on Active Storage

* 15-year average 1953-67

SOIL MOISTURE - February

Drainage Basin and Station	Number	Elev.	Profile Depth	(Inches) :	Soil Moisture Content		
				Total Capacity :	(Inches) as of Feb. 1		
					1971	1970	1969
<u>CRAB CREEK</u>							
Jack Woods	18B3m	2600	48	13.6	8.9	8.3	8.9
Krause	18B4m	2440	48	13.6	4.9	7.2	7.9
Sheffels	18B5m	2360	48	13.6	5.7	6.1	5.8
Sherman	18B7m	2440	48	13.6	5.5	6.6	5.8
Wheatridge	18B6m	2200	48	13.6	8.9	8.4	6.5
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	2.6	2.1	3.0
Trout Creek	3-M	3600	48	7.3	3.4**	3.0*	2.8
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	4.9	5.7	4.5
Lake Cle Elum	21B14M	2200	48	12.8	9.2	9.1	9.1
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	10.6	--	10.2
Helmers	17C2M	4400	48	12.0	10.9	--	10.7
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	10.3	6.8	8.7

* January 1 measurement
 ** November 1 measurement

FALL SOIL MOISTURE

Drainage and Station	Number	Elev.	Profile Depth	(Inches) :	Soil Moisture Content		
				Total Capacity :	(Inches) as of Oct. 1		
					1970	1969	1968
<u>CRAB CREEK</u>							
Jack Woods	18B3m	2600	48	13.6	7.0	7.5	7.1
Krause	18B4m	2440	48	13.6	4.4	5.9	5.2
Sheffels	18B5m	2360	48	13.6	4.4	4.5	4.9
Sherman	18B7m	2200	48	13.6	3.8	4.2	3.9
Wheatridge	18B6m	2200	48	13.6	7.8	5.4	4.6
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	1.7	2.7	2.7
Trout Creek	3-M	3600	48	7.3	3.4*	3.8*	4.1
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	2.4	--	3.1
Lake Cle Elum	21B14M	2200	48	12.8	7.6	--	5.2
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	5.9	6.1	7.4
Helmers	17C2M	4400	48	12.0	7.3	7.1	7.6
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	5.1	9.8	5.5

* November 1 measurement

PRECIPITATION ^{1/}

Division Averages and Departures

Drainage Divisions	FALL		1970 ^{2/}	
	Sep - Oct	1970 ^{2/}	Nov - Dec 1970 - Jan 1971 ^{2/}	
	Average	Departure	Average	Departure
Columbia in Canada	3.64	-0.25	11.28	+2.22
Pend Oreille - Spokane	4.30	+0.42	13.69	+1.22
Northeastern Washington	3.16	+0.91	7.85	+0.11
Southeastern Washington	3.59	+0.94	7.82	-0.60
Central Washington	3.05	-1.39	22.07	+2.38
North Central Washington	1.36	-0.05	5.92	+1.34
Northwest Slope Cascades	12.29	+0.62	38.86	+3.23
Southwest Slope Cascades	7.74	+0.02	36.44	+8.29

Northeastern Washington	- Lower Spokane, Colville, Sanpoil and lower Kettle drainages.
Southeastern Washington	- Touchet, Tucannon and Palouse drainages.
Central Washington	- Yakima, Wenatchee and Chelan drainages.
North Central Washington	- Methow and Okanogan drainages.
Northwest Slope Cascades	- Puget Sound drainages.
Southwest Slope Cascades	- Lower Columbia drainages.

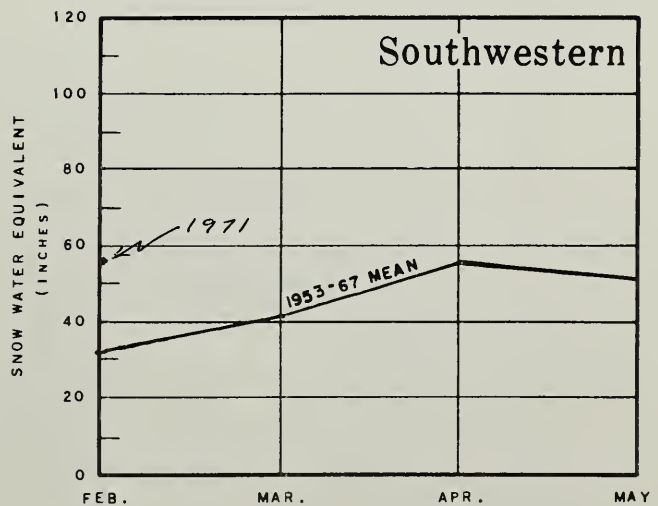
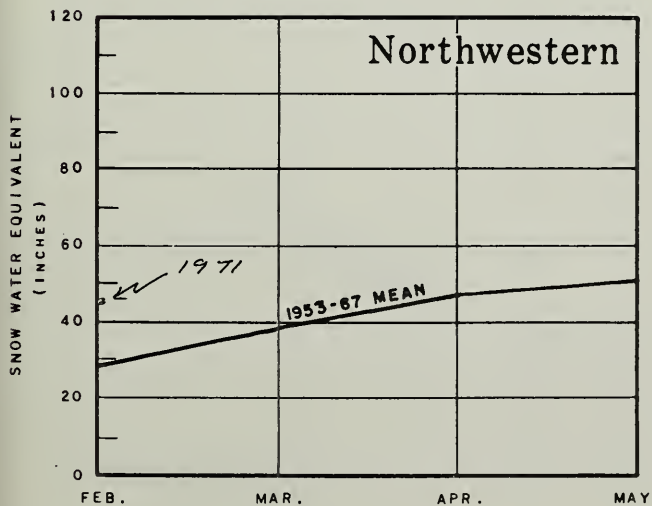
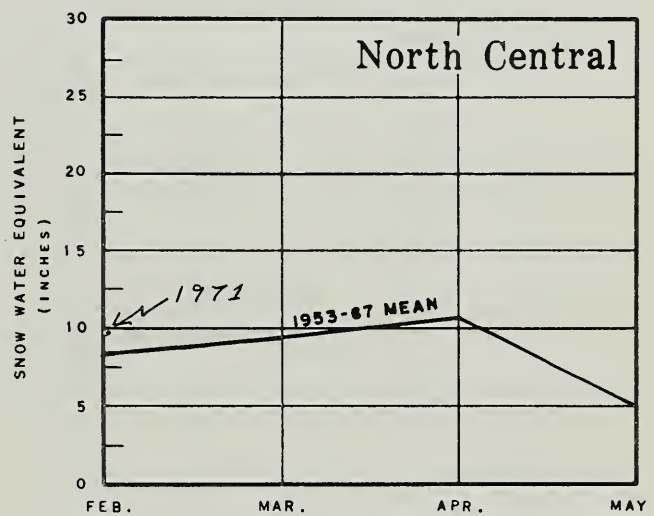
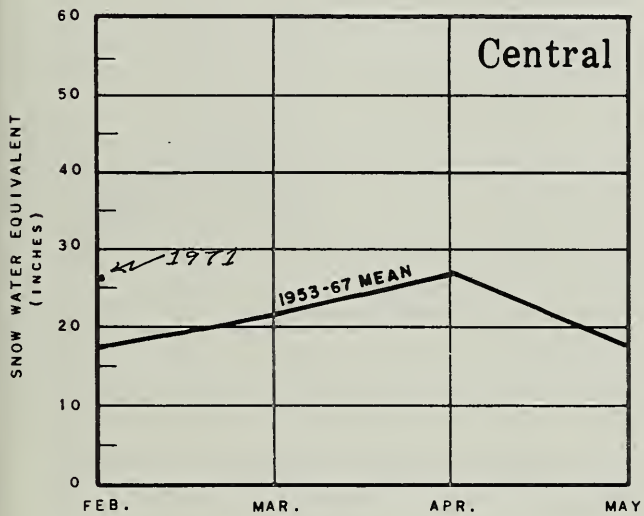
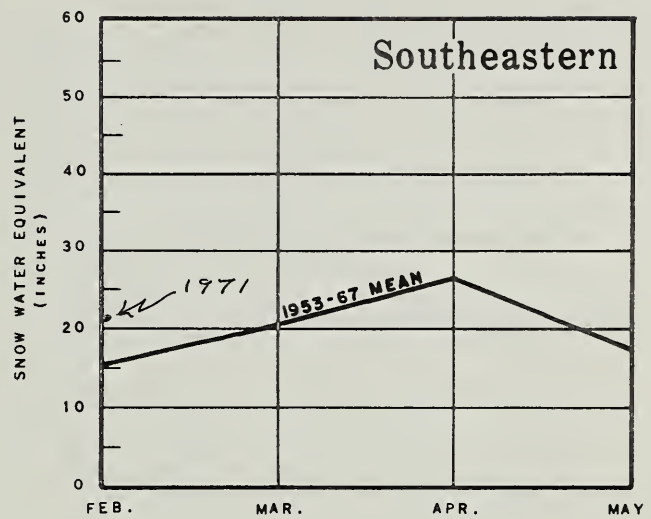
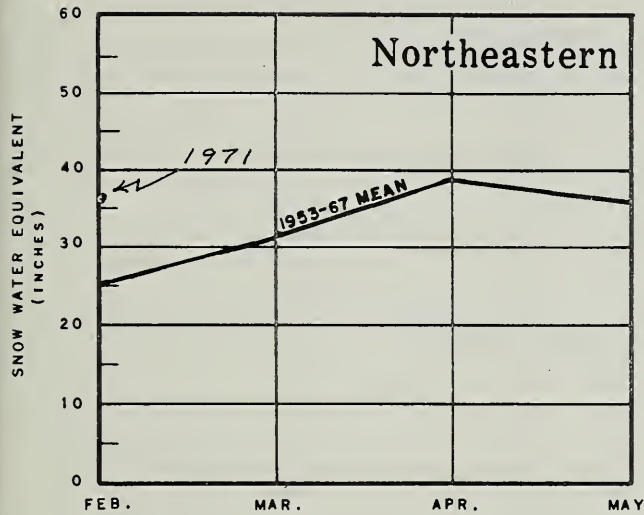
^{1/} - Preliminary analysis by U. S. Weather Bureau from data furnished by Meteorological Services of Canada and U. S. Weather Bureau

^{2/} - Departure from 15-year (1953-67) drainage division average.

WASHINGTON SNOW COVER

1971

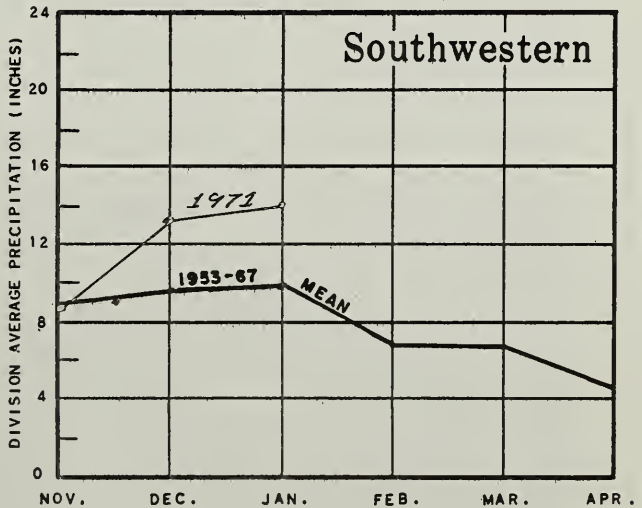
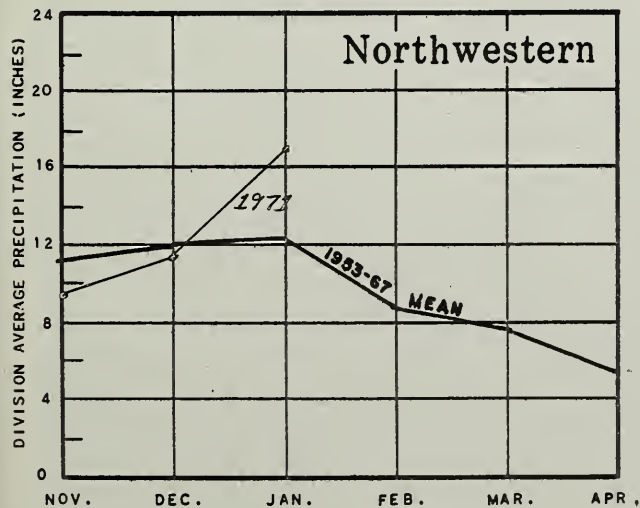
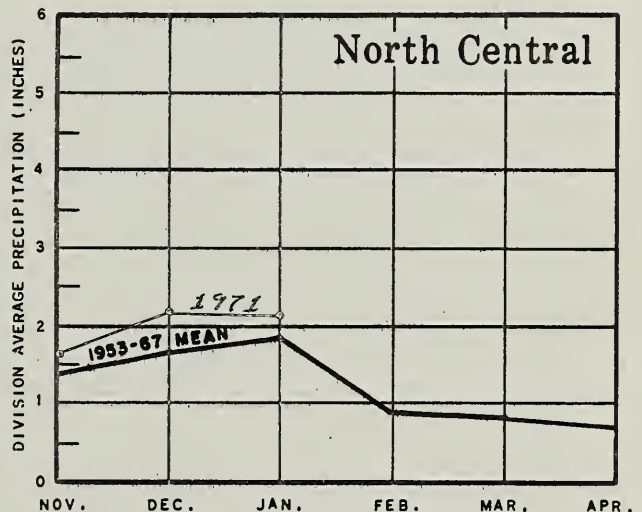
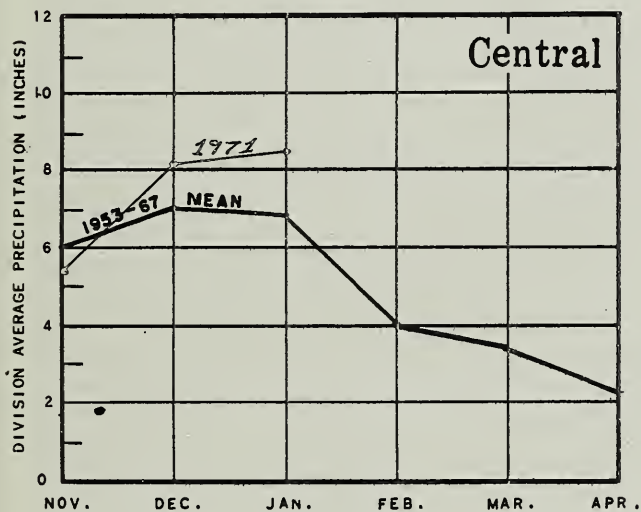
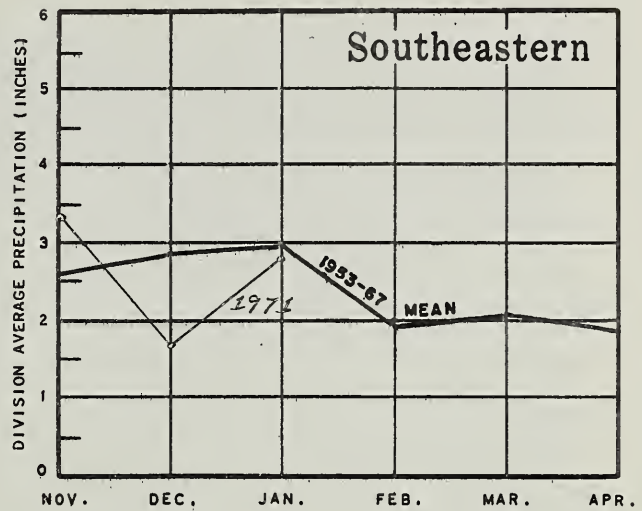
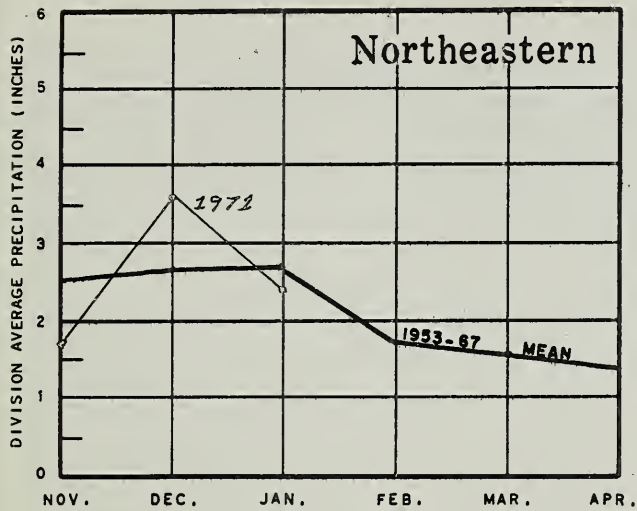
DRAINAGE AREAS



WASHINGTON VALLEY PRECIPITATION

1970-1971

DRAINAGE AREAS

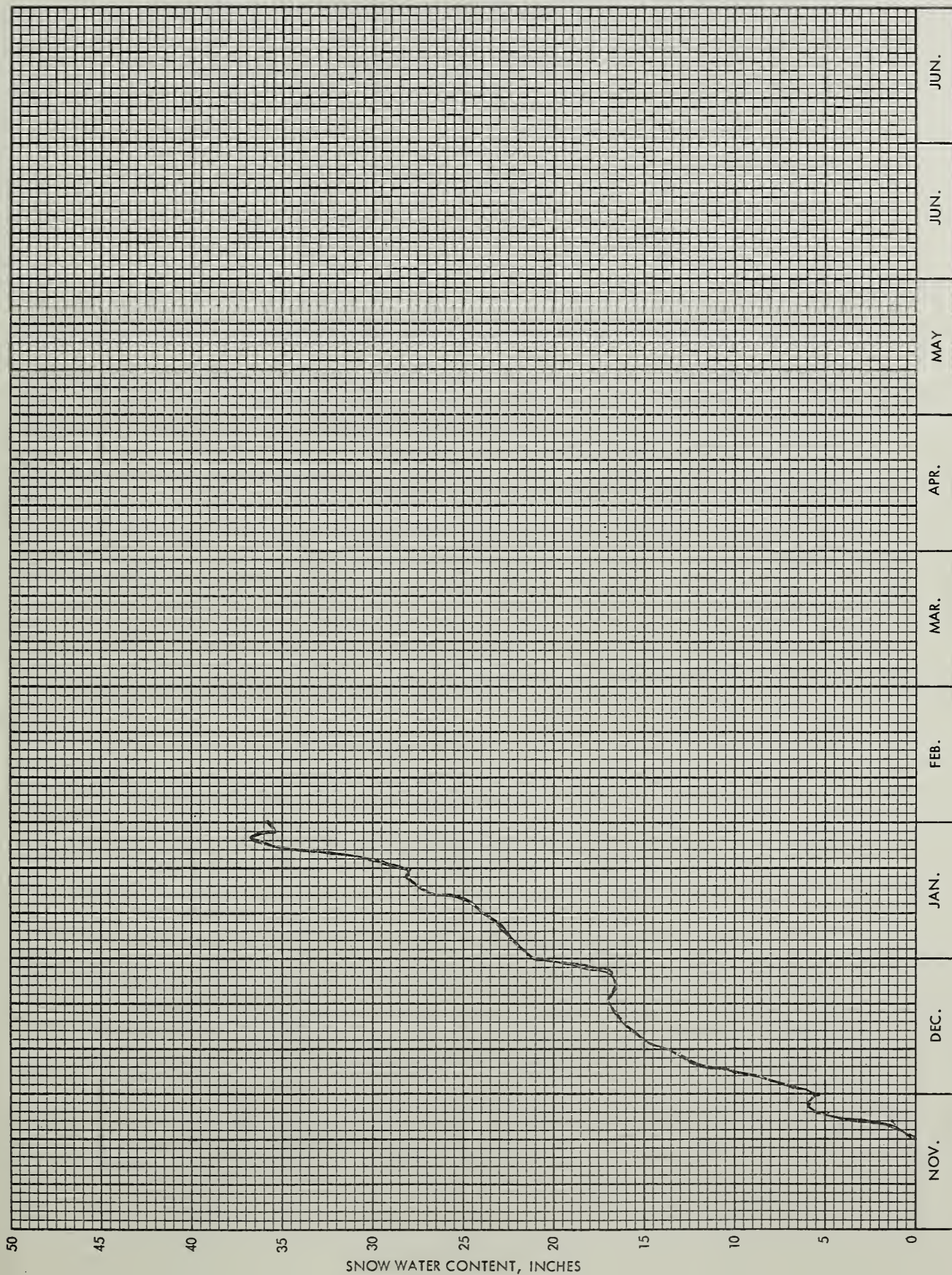


SNOW PILLOW DATA

Berne-Mill Creek

Sec. 13 T. 26N R. 14E No. 21B41SP Drainage: Wenatchee

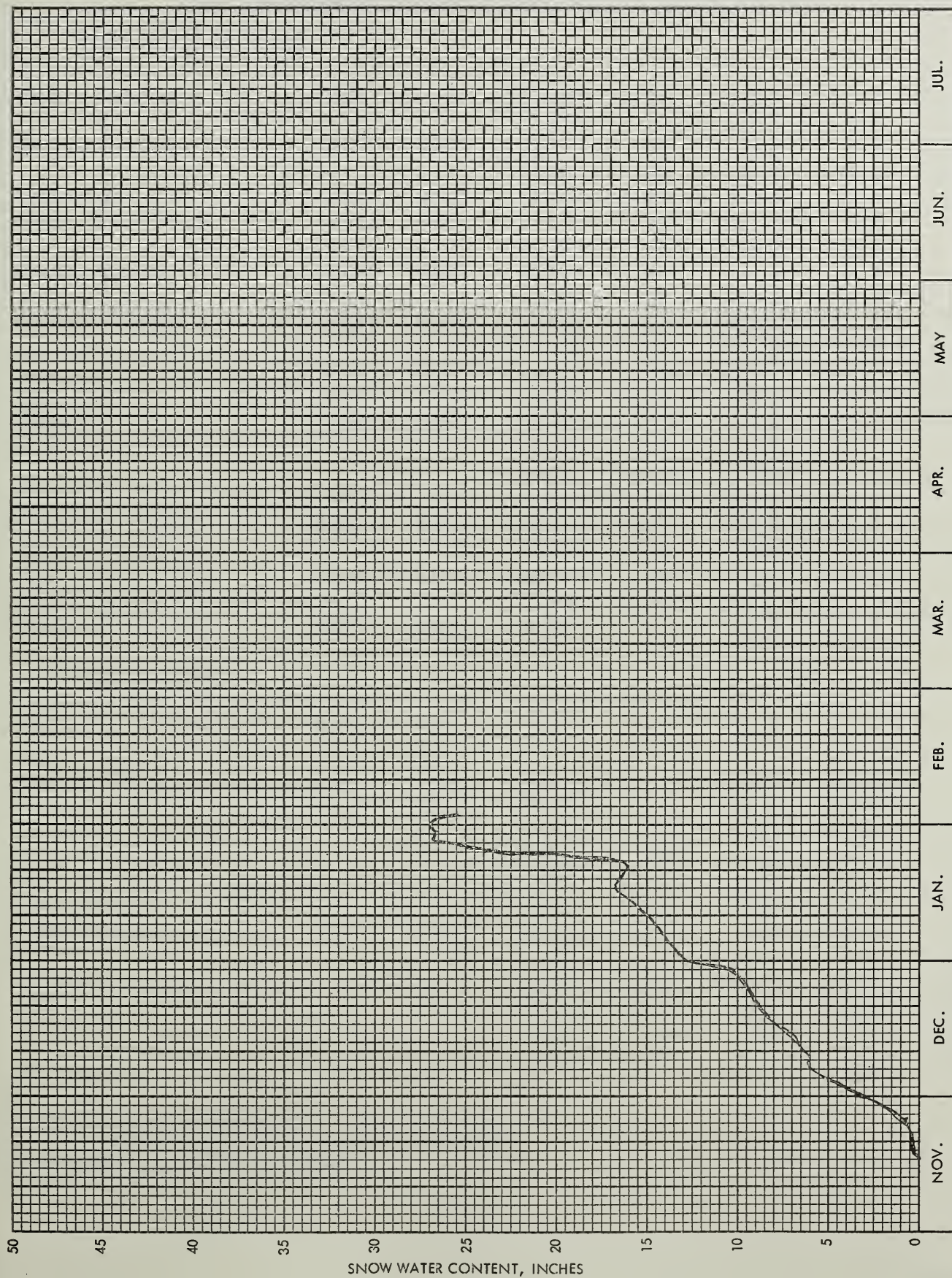
Lat. 47° 46' Long. 121° 01' Elev. 3170



SNOW PILLOW DATA

Gougar Mountain

Sec. 21 T. 21N R. 9E No. 21B42SF Drainage: Green River
 Lat. 47° 17' Long. 121° 40' Elev. 3200'



SNOW DATA TO FEBRUARY 1, 1971 - APPENDIX 1

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average ††

U P P E R C O L U M B I A D R A I N A G EPEND OREILLE RIVER

Benton Meadow	16A2	2344	12/30	24	5.9	2.4	3.2
			1/28	20	7.1	8.3	5.1
Benton Spring	16A3	4900	12/31	39	9.0	3.8	8.5
			1/27	49	15.8	11.2	14.4
#Chewelah	17A4	4925	1/31	40	14.5	10.5	13.2*
Heart Lake Trail	14C10	4800	12/29	50	11.4	4.9	--
			1/28	78	26.2	12.8	--
Hoodoo Basin	15C10	6000	12/29	89	25.2	12.9	--
			1/28	139	48.3	33.1	--
Hoodoo Creek	15C01	5900	12/29	84	23.4	10.2	18.0*
			1/28	36	47.0	31.8	32.0
Lookout	15B2	5250	12/31	85	21.8	9.0	15.7
			1/28	109	36.1	24.5	25.0
Nelson	Canada	3050	11/13	0	0.0	--	--
			11/30	9	1.4	--	--
			12/31	40	8.8	--	--
			1/29	44	14.1	8.9	11.2**
Schweitzer Bowl	16A6	4500	12/31	73	17.2	7.7	--
			1/28	80	28.3	21.0	--
Schweitzer Ridge	16A5	6100	12/31	98	28.0	12.0	--
			1/28	109	39.7	23.7	--
Winchester Creek	17A3	2970	1/29	35	12.6	9.4	9.2*

KETTLE RIVER

Big White Mountain	Canada	5500	2/1	57	15.6	9.4	--
Boulder Road	18A2	1450	11/12	0	0.0	0.0	--
			11/24	0	0.0	0.0	--
			12/10	12	3.0	0.5	--
			12/28	26	5.3	1.7	2.1*
			1/11	29	6.3	1.9	3.4*
			1/25	26	7.3	4.0	4.1*
Butte Creek	18A3	4070	11/12	5	1.0	0.0	--
			11/24	6	0.7	0.0	1.5*
			12/10	15	3.3	0.7	2.9*
			12/28	28	6.3	3.0	4.3*
			1/11	29	6.7	2.6	5.8*
			1/25	32	9.1	6.0	6.6*

Not located directly on this drainage

* Adjusted 1953-67 average

APPENDIX 2

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
						Last Year	Average ⁺⁺
NAME	No.	Elevation					
KETTLE RIVER (Cont.)							
Cabin Creek	18A8	3170	11/12	0	0.0	0.0	--
			11/24	0	0.0	0.0	1.1*
			12/10	13	3.2	0.8	2.4*
			12/28	26	6.0	3.7	4.2*
			1/11	27	6.2	2.8	5.5*
			1/25	31	8.8	5.3	6.0*
Carmi	Canada	4100	1/30	25	5.4	4.6	4.3**
Farron	Canada	4000	1/29	41	11.7	7.7	9.6**
Goat Creek	18A4	3595	11/12	3	0.5	0.0	--
			11/24	0	0.0	0.0	1.0*
			12/10	12	2.9	0.5	2.1*
			12/28	26	5.9	3.4	3.7*
			1/11	26	6.0	2.5	4.9*
			1/25	28	8.2	6.0	5.5*
Lower Trapping Creek	Canada	3050	1/30	20	4.0	3.8	4.6**
#Monashee Pass	Canada	4500	1/27	39	7.5	6.4	9.6**
Old Glory Mountain	Canada	7000	1/30	72	25.4	13.0	18.3**
Snow Caps Creek	18A5	2150	11/12	0	0.0	0.0	--
			11/24	0	0.0	0.0	--
			12/10	12	2.8	0.7	--
			12/28	26	5.7	2.7	2.3*
			1/11	28	6.0	2.5	3.5*
			1/25	26	7.0	5.0	4.3*
Snow Caps Trail	18A6	2720	11/12	0	0.0	0.0	--
			11/24	0	0.0	0.0	--
			12/10	11	3.1	0.8	1.7*
			12/28	26	5.5	3.0	3.0*
			1/11	26	6.2	1.6	4.0*
			1/25	28	7.8	4.8	4.9*

Not located directly on this drainage
* Adjusted 1953-67 average
** Average for years of record

APPENDIX 3

SNOW

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average ††
<u>KETTLE RIVER (Cont.)</u>							
Summit G. S.	18A7	4600	11/12	5	1.0	0.0	--
			11/24	4	1.0	0.0	1.7*
			12/10	10	2.2	0.7	3.0*
			12/28	20	4.3	2.7	4.3*
			1/11	22	5.4	2.9	5.9*
			1/25	27	7.0	4.7	6.7*
Upper Trapping Creek	Canada	5500	1/30	29	8.2	5.6	7.1**
<u>COLVILLE RIVER</u>							
Baird	17A6	3215	1/31	16	4.8	5.6	5.9*
Carlson	18A9	2885	1/30	15	6.0	4.2	4.3*
Chewelah	17A4	4925	1/31	40	14.5	10.5	13.2*
Stranger Mountain	17A5	4990	1/31	47	17.4	4.6	9.8*
Togo	18A10	3370	1/30	38	14.2	9.3	8.6*
<u>SPOKANE RIVER</u>							
4th of July Summit	16B3	3100	12/31	31	6.0	1.8	3.5
			1/28	34	10.0	7.5	6.4
#Lookout	15B2	5250	12/31	85	21.8	9.0	15.7
			1/28	109	36.1	24.5	25.0
Sherwin	16C1	3200	12/31	34	6.8	3.8	--
			2/1	35	11.5	9.3	10.4
<u>OKANOGAN RIVER</u>							
Aberdeen Lake	Canada	4300	1/29	20	5.0	4.4	5.1**
Blackwall Peak	Canada	6250	12/24	52	16.2	--	--
			1/27	108	36.5	19.0	23.5**
Bouleau Lake	Canada		12/27	37	4.2	New Course	
			1/30	49	11.0		
Brenda Mine	Canada	4800	1/27	48	9.5	6.8	--
Brookmere	Canada	3200	1/31	33	10.7	6.6	7.1**
Carrs Landing Lower	Canada	2250	1/2	10	1.2	--	--
			1/28	10	3.0	2.3	1.8**
Carrs Landing Upper	Canada	3200	1/2	14	1.8	--	--
			1/28	21	4.0	4.5	4.1**
Clark +	19A8a	7000	1/31	53	15.9	--	--
Copper Mountain	Canada	4300	1/31	19	6.0	--	5.0**
Enderby	Canada	4300	1/27	101	29.1	20.4	23.7**
Hamilton Hill	Canada	4900	1/30	50	16.2	--	9.9**

Not located directly on this drainage

* Adjusted 1953-67 average

** Average for years of record

+ Snow water equivalent estimated from aerial stadia observation

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average †
<u>OKANOGAN RIVER (Cont.)</u>							
#Harts Pass	20A5A	6500	1/27	134	44.6	26.0	28.2*
#Horseshoe Basin +	19A5a	7000	2/1	44	14.1	10.5	9.7*
Isintok Lake	Canada	6300	12/28	18	3.9	--	--
			1/31	24	6.7	4.0	5.4**
Lost Horse Mountain	Canada	6300	2/1	32	9.1	4.6	6.1**
#Loup Loup	19A7	4650	1/29	42	10.6	9.6	6.6**
McCulloch	Canada	4200	12/28	19	3.6	--	--
			1/28	29	4.9	4.3	4.9**
Missezula Mountain	Canada	5100	1/28	35	9.0	--	6.2**
Mission Creek	Canada	6000	1/28	67	18.5	9.6	13.0**
Monashee Pass	Canada	6000	1/27	39	7.5	6.4	9.6**
Mount Kobau	Canada	6000	1/29	45	13.5	9.6	10.5**
Muckamuck +	19A9a	6390	1/31	50	15.0	--	--
Mutton Creek No. 1	19A1	5700	1/27	55	14.6	11.0	9.7*
Mutton Creek No. 2	19A4	6000	1/29	50	15.0	10.6	10.1*
New Copper Mountain	Canada	4300	1/31	24	6.5	6.5	5.3**
Paysayten +	20A28a	4300	2/1	56	17.9	--	11.6*
Postill Lake	Canada	4500	1/29	30	7.3	5.0	5.8**
Rusty Creek	19A3	4000	1/29	30	8.8	6.6	5.6
Salmon Meadows	19A2	4500	1/28	43	9.8	9.2	7.5*
Silver Star Mountain	Canada	6050	1/30	73	22.6	15.2	17.7*
Starvation Mountain	19A10a	6750	1/31	53	15.9	--	--
Summerland Reservoir	Canada	4200	12/27	22	4.6	--	--
			1/30	33	8.9	5.9	7.3**
Touts Coulee	19A6	2845	1/28	22	5.2	4.0	3.1*
Trout Creek	Canada	4700	1/28	33	7.2	4.6	5.0**

METHOW RIVER

Billy Goat Pass +	21A10a	6409	2/1	102	32.6	24.8	21.5*
Dollar Watch +	20A29a	7000	2/1	81	25.9	18.6	18.4*
Harts Pass	20A5A	6500	1/27	134	44.6	26.0	28.2*
Horseshoe Basin +	19A5A	7000	2/1	44	14.1	10.5	9.7*
Loup Loup	19A7	4650	1/29	42	10.6	9.6	6.6*
#Mutton Creek No. 1	19A1	5700	1/27	55	14.6	11.0	9.7*
#Mutton Creek No. 2	19A4	6000	1/29	50	15.0	10.6	10.1*
#Rusty Creek	19A3	4000	1/29	30	8.8	6.6	5.6
#Salmon Meadows	19A2	4500	1/28	43	9.8	9.2	7.5*
#War Creek Pass +	20A31a	6500	2/1	116	37.1	--	--

Not located directly on this drainage

* Adjusted 1953-67 average

** Average for years of record

+ Snow water equivalent estimated from aerial stadia observations

APPENDIX 5

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average ††

CHELAN LAKE BASIN

Cloudy Pass +	20A22a	6500	2/1	98	31.4	--	27.4*
Greenwood Flat +	20A25a	3540	2/1	86	27.5	--	21.6*
Little Meadows +	20A24a	5275	2/1	94	30.1	--	29.9*
Lyman Lake +	20A23A	5900	2/1	149	47.7	--	38.9*
Park Creek Flat +	20A13a	2220	2/1	90	28.8	--	27.8*
Park Creek Ridge	20A12A	4600	2/1	121	38.7	--	35.3*
Petersons +	20A16a	3730	2/1	96	30.7	--	26.2*
Rainy Pass	20A9	4780	1/28	129	39.8	22.4	27.5*
Safety Harbor +	20A30A	6300	2/1	89	28.5	--	--
War Creek Pass +	20A31a	6500	2/1	116	37.1	--	--

ENTIAT RIVER

Brief	20B19	1600	1/27	35	12.0	9.0	6.3*
Entiat Meadows +	20A33a	4800	1/27	150	48.0	--	--
Entiat River Trail +	20A34a	3150	1/27	76	27.4	--	--
Fox Camp +	20A36a	6510	1/27	158	50.6	--	--
Pope Ridge	20B20	4300	1/28	61	21.8	14.5	--
Pope Ridge SP	20B24SP	4300	Not available			--	--
Pugh Ridge +	20A32a	6400	1/27	109	34.9	--	--
Shady Pass	20A37	6200	1/29	87	28.2	--	--
Snow Brushy +	20A35a	3850	1/27	135	43.2	--	--
Tommy Creek +	20B21a	5300	1/27	100	32.0	--	--

WENATCHEE RIVER

Berne-Mill Creek	21B23	2925	11/30	21	7.0	--	4.8*
			12/14	48	13.7	4.5	7.3*
			12/31	78	20.8	9.2	11.4*
			1/18	74	25.6	11.5	17.1*
			1/29	86	34.5	23.0	20.7*
Berne-Mill Creek New	21A41SP	3240	10/30	0	0.0	0.0	--
			11/30	20	6.2	--	--
			12/31	76	21.0	10.0	--
			1/29	78	33.6	22.4	--
Blewett Pass No. 2	20B2	4270	12/29	30	8.1	4.6	6.3
			1/28	58	20.3	14.8	11.2

Not located directly on this drainage

* Adjusted 1953-67 average

+ Snow water equivalent estimated from aerial stadia observation

APPENDIX 6

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average ††
<u>WENATCHEE RIVER</u>							
Chiwaukum G. S.	20B16	1810	11/30	13	3.2	--	1.7*
			12/14	22	5.2	2.7	2.7*
			12/31	47	9.6	5.2	4.6*
			1/18	47	13.0	6.4	7.5*
			1/29	46	15.2	13.4	9.0*
Lake Wenatchee	20B5	1970	11/30	15	4.1	--	--
			12/14	28	6.6	2.0	3.7*
			12/31	52	11.4	4.6	5.8*
			1/18	50	15.0	6.1	9.6*
			1/29	48	18.1	13.7	12.0*
Leavenworth R. S.	20B17	1127	10/28	0	0.0	0.0	--
			11/13	0	0.0	0.0	--
			11/25	6	2.0	0.0	--
			12/14	19	4.6	2.0	--
			12/28	30	5.6	4.5	2.9*
			1/12	24	8.0	5.7	4.0*
			1/29	24	8.6	9.7	5.0*
#Lyman Lake +	20A23A	5900	2/1	149	47.7	--	38.9*
Merritt	20B18	2140	11/30	17	5.2	--	2.9*
			12/14	35	10.2	2.4	4.6*
			12/31	63	16.4	5.6	8.0*
			1/18	58	20.2	7.4	12.0*
			1/29	54	23.6	16.4	14.1*
Stevens Pass	21B1	4070	10/30	13	2.5	0.0	--
			11/13	16	3.8	0.0	--
			11/30	41	12.1	3.1	10.0*
			12/14	77	23.4	8.6	14.7*
			12/31	120	33.5	16.4	20.8
			1/18	118	41.7	21.7	26.6
			1/29	145	52.5	35.3	34.4
Stevens Pass Sand Shed	21B45	3700	10/30	0	0.0	0.0	--
			11/30	28	8.6	--	--
			12/14	58	17.5	5.2	--
			12/31	91	25.3	11.4	--
			1/18	88	30.2	15.4	--
			1/29	110	40.1	25.0	--

Not located directly on this drainage

* Adjusted 1953-67 average

+ Snow water equivalent estimated from aerial stadia observation

†† 1953-1967 period

APPENDIX 7

SNOW

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average $\dagger\dagger$
<u>COLOCKUM CREEK</u>							
Colockum Creek Upper	20B22	5300	1/27	45	14.8	14.3	--
Colockum Creek Lower	20B23	4300	1/27	35	10.5	12.0	--
<u>SQUILCHUCK CREEK</u>							
Beehive Springs	20B3	4400	1/27	32	10.2	10.4	5.1*
Scout-A-Vista	20B4	3400	1/27	31	9.2	9.8	5.4*
<u>STEMILT CREEK</u>							
Jump-Off	20B8	4450	1/27	34	11.4	10.2	4.8*
Stemilt Slide	20B6	5000	1/27	56	16.3	11.0	10.0*
Upper Wheeler	20B7	4400	1/27	35	12.3	11.6	6.5*
<u>YAKIMA RIVER</u>							
#Ahtanum R. S.	21C11	3100	12/27	22	5.3	4.6	3.2
			1/27	27	8.7	8.2	5.7
#Blewett Pass No. 2	20B2	4270	12/29	30	8.1	4.6	6.3
			1/28	58	20.3	14.8	11.2
Bumping Lake (Old)	21C8	3450	12/1	22	3.9	--	3.8*
			12/16	41	9.0	4.2	4.2*
			12/31	54	14.1	8.9	6.6
			1/18	55	18.9	12.0	10.6*
			1/31	52	21.5	22.2	12.3
Bumping Lake New	21C36	3400	12/1	27	4.8	--	--
			12/16	47	9.6	4.9	--
			12/31	59	16.6	9.6	--
			1/18	60	22.1	13.4	--
			1/31	61	26.0	24.2	--
#Cayuse Pass	21C6	5300	1/1	165	51.5	23.6	--
			1/27	231	89.6	49.8	56.3
Colockum Pass	20B9	5370	1/28	60	17.8	12.7	--
Cooke Creek	20B10	4123	1/28	29	8.8	9.6	5.0*
Grouse Camp	20B11	5385	1/29	58	17.4	--	12.2*
High Creek	20B12	2930	1/29	28	8.0	7.7	4.6*
Joe Lake \dagger	21B46a	4624	Not Measured			45.9	--

Not located directly on this drainage

* Adjusted 1953-67 average

 \dagger Snow water equivalent estimated from aerial stadia observation

APPENDIX 8

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average † ‡
<u>YAKIMA RIVER (Cont.)</u>							
Lake Cle Elum	21B14M	2200	12/1	17	3.0	--	--
			12/14	20	4.7	2.0	1.7*
			1/4	34	8.3	3.6	3.9*
			1/17	32	8.7	4.5	5.9*
			1/29	26	10.9	11.7	7.8
Lemah Creek +	21B47a	3327	1/27	117	41.0	32.4	--
Manashtash	20C1	3935	1/27	22	6.7	8.4	3.4*
Morse Lake	21C17	5400	Not Measured			39.6	39.7*
Nanum	20B13	3875	1/29	38	11.2	9.1	6.9*
#Olallie Meadows	21B2	3625	1/29	135	49.4	30.3	30.2*
#Satus Pass	20D1	4030	1/28	45	16.6	12.1	--
#Stampede Pass	21B10	3000	Not measured			--	--
			Not measured			--	--
			Not measured			2.0	7.4*
			Not measured			6.5	10.8*
			1/1	109	19.0	16.9	16.9*
			1/15	124	26.3	15.0	21.4*
			1/31	115	27.8	27.9	28.8
Trail Creek	20B14	3360	1/28	17	5.5	5.3	--
Tunnel Avenue	21B8	2450	11/28	20	4.2	--	--
			12/15	48	12.6	1.8	5.5*
			1/1	70	17.4	4.8	8.6
			1/14	63	18.2	7.1	13.1*
			1/30	68	26.0	17.5	17.0
Walters Flat	20B15	3360	1/29	32	9.0	8.0	5.9*
Waptus Lake +	21B49a	3024	1/27	125	43.8	30.6	--
Van Epps Pass +	20B26a		1/27	156	54.6	New Aerial	
White Pass (E. Side)	21C28	4500	12/7	27	6.9	--	--
			12/18	35	9.9	5.0	--
			1/5	54	15.4	6.7	11.1*
			1/16	69	20.4	14.1	13.7*
			1/29	82	29.9	19.3	16.7*
White Pass (Leech L.)	21C27	4500	12/7	28	9.2	--	--
			12/18	38	12.2	6.7	--
			12/29	51	12.7	9.8	13.3*
			1/16	78	24.8	15.1	--
			1/28	98	33.1	23.8	20.6*

Not located directly on this drainage

* Adjusted 1953-67 average

+ Snow water equivalent estimated from aerial stadia observation

APPENDIX 9

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	NO.	Elevation				Last Year	Average ††

AHTANUM CREEK

Ahtanum R. S.	21C11	3100	12/27	22	5.3	4.6	3.2*
			1/27	27	8.7	8.2	5.7

L O W E R C O L U M B I A D R A I N A G EASOTIN CREEK

Spruce Springs	17C4	5700	1/25	65	21.9	20.0	--
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MILL CREEK

Homestead	17C1	4030	1/28	23	7.5	--	5.5*
Martin Springs	17C2	4400	1/28	34	11.4	--	8.4*

KLICKITAT RIVER

Satus Pass	20D1	4030	1/28	45	16.6	12.1	--
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WHITE SALMON RIVER

Cultus Creek	21C12	4000	1/2	102	32.7	16.6	15.4*
			1/27	143	53.4	28.4	29.4*
Surprise Lakes	21C13A	4250	1/2	107	33.3	16.0	18.5*
			1/27	154	57.8	30.3	32.7*

WIND RIVER

Old Man Pass	21D19	3100	12/31	60	15.9	4.3	4.1*
			1/27	84	29.2	8.1	12.5*

LEWIS RIVER

Blue Lake +	21C22a	4800	1/2	180	57.6	25.0	30.1*
			1/27	236	85.0	53.2	56.0*
Bob's Trail	21C21	2200	1/2	49	12.9	2.0	6.3*
			1/27	72	22.3	4.6	9.7*
Calamity Ridge +	22D1a	2500	1/2	30	7.8	1.8	--
			1/27	33	12.5	3.3	--
Council Pass +	21C18a	4200	1/2	99	29.7	13.0	18.4*
			1/27	132	50.2	25.6	27.4*

Not located directly on this drainage

* Adjusted 1953-67 average

+ Snow water equivalent estimated from aerial stadia observation

APPENDIX 10

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	NO.	Elevation				Last Year	Average †
<u>LEWIS RIVER (Cont.)</u>							
#Cultus Creek	21C12	4000	1/2	102	32.7	16.6	15.4*
			1/27	143	53.4	28.4	29.4*
Divide Meadow +	21C29a	5600	1/2	112	35.8	14.7	24.7*
			1/27	156	57.7	37.4	39.5*
Grand Meadow	21C25	3500	1/2	58	16.2	7.9	9.7
			1/27	94	30.4	15.0	16.9*
Lone Pine Shelter	21C26	3800	1/2	105	30.7	10.8	--
			1/28	138	49.7	22.4	28.8*
Marble Mountain	22C5a	3200	12/31	61	20.7	9.8	--
			1/27	115	49.4	12.8	--
#Mosquito Meadows	21C19	4100	1/2	110	32.6	12.9	--
			1/28	138	52.6	23.1	31.8*
New Muddy River	22C6	2200	1/3	39	12.4	0.7	--
			1/28	43	16.0	2.2	--
Old Man Pass	21D19	3100	12/31	60	15.9	4.3	4.1*
			1/27	84	29.2	8.1	12.5*
Plains of Abraham +	22C1a	4400	1/2	160	51.2	24.3	22.1*
			1/27	180	68.4	--	39.0*
Smith Creek Road	22C4	2100	1/3	58	20.3	7.9	6.5*
			1/28	70	28.8	14.2	11.9*
Spencer Meadow +	21C20a	3400	1/2	76	20.5	6.2	7.8*
			1/27	96	35.5	11.0	14.3*
Surprise Lakes	21C13A	4250	1/2	107	33.3	16.0	18.5*
			1/27	154	57.8	30.3	32.7*
Table Mountain +	21C24a	4200	1/2	119	34.2	15.7	21.1*
			1/27	150	57.0	30.4	32.1*
Timbered Peak +	21D18a	3000	1/2	60	15.6	2.8	--
			1/27	69	26.2	4.0	12.5*

COWLITZ RIVER

Cayuse Pass	21C6	5300	1/1	165	51.5	23.6	--
			1/27	231	89.6	49.8	56.3*
Mosquito Meadows	21C19	4100	1/2	110	32.6	12.9	--
			1/28	138	52.6	23.1	31.8*
Ohanapecosh	21C32	2200	12/29	40	7.9	2.4	--
			2/3	70	27.5	8.0	13.7*
Packwood Lake	21C31	2870	1/1	33	7.7	1.2	--
			1/27	61	20.1	5.4	8.6*
Pigtail Peak	21C33	5900	12/28	92	27.8	16.1	--
			1/16	135	51.7	27.8	--
			1/28	171	60.8	35.3	--

Not located directly on this drainage

* Adjusted 1953-67 average

+ Snow water equivalent estimated from aerial stadia observation

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average ††
<u>COWLITZ RIVER (Cont.)</u>							
Plains of Abraham +	22C1a	4400	1/2	160	51.2	24.3	22.1
			1/27	180	68.4	--	39.0
Potato Hill	21C14	4500	1/2	80	21.3	10.9	--
			1/28	111	38.3	24.6	20.8*
#White Pass (E. Side)	21C28	4500	12/7	27	6.9	--	--
			12/18	35	9.9	5.0	--
			1/5	54	15.4	6.7	11.1
			1/16	69	20.4	14.1	13.7*
			1/29	82	29.9	19.3	16.7*
#White Pass (Leech L.)	21C27	4500	12/7	28	9.2	--	--
			12/18	38	12.2	6.7	--
			12/29	51	12.7	9.8	13.3*
			1/16	78	24.8	15.1	--
Willame Creek	21C30	3250	1/28	98	33.1	23.8	20.6*
			1/1	73	17.2	5.7	--
			1/27	111	38.4	12.7	21.4*

PUGET SOUND DRAINAGENISQUALLY RIVER

Ghost Forest	21C4	4550	12/28	68	16.0	12.6	--
			1/29	151	54.3	27.0	30.7*
Longmire	21C3	2760	12/28	17	4.7	2.2	--
			1/29	52	21.2	4.7	7.3*
New Paradise Park	21C35	5500	12/28	105	32.6	17.2	--
			2/1	155	70.2	48.0	--
Stem Glade	21C1	5050	1/4	126	37.3	21.1	--
			2/1	176	71.1	42.8	47.1*

WHITE RIVER

#Cayuse Pass	21C6	5300	1/1	165	51.5	23.6	--
			1/27	231	89.6	49.8	56.3*

GREEN RIVER

Airstrip	21B24	1800	1/2	26	7.0	0.5	--
			1/27	20	6.6	4.2	--
Charley Creek	21B25	1200	1/2	12	4.0	0.0	--
			1/27	2	0.4	0.0	--

Not located directly on this drainage

* Adjusted 1953-67 average

+ Snow water equivalent estimated from aerial stadia observations

APPENDIX 12

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average ††

GREEN RIVER (Cont.)

Cougar Mountain	21B42SP	3200	2/2	61	23.8	27.8	--
Grass Mountain # 2	21B27	2900	1/2	43	13.3	5.4	6.0*
			1/27	72	29.2	13.1	13.6*
Grass Mountain # 3	21B28	2100	1/2	27	7.8	1.3	--
			1/27	28	11.0	4.3	--
Lester Creek	21B29	3100	1/2	48	11.2	5.8	9.8*
			1/27	70	24.4	12.6	16.3*
Lynn Lake	21B50	4000	1/2	27	9.3	6.5	--
			1/27	72	32.0	7.5	--
Sawmill Ridge	21B31	4700	1/2	67	17.8	9.0	12.0*
			1/27	124	41.4	19.6	27.8*
Snowshoe Butte	21B43SP	5000	12/24	65	20.6	--	--
			Not Measured			29.0	--
Stampede Pass	21B10	3000	1/1	109	19.0	16.9	16.9*
			1/15	124	26.3	15.0	21.4*
			1/31	115	27.8	27.9	28.8
Twin Camp	21B30	4100	1/2	47	13.0	8.4	10.8*
			1/27	81	26.8	16.0	19.3*

SNOQUALMIE RIVER

Olallie Meadows	21B2	3625	1/29	135	49.4	30.3	30.2*
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SKYKOMISH RIVER

#Stevens Pass	21B1	4070	10/30	13	2.5	0.0	--
			11/13	16	3.8	0.0	--
			11/30	41	12.1	3.1	10.0*
			12/14	77	23.4	8.6	14.7*
			12/31	120	33.5	16.4	20.8
			1/18	118	41.7	21.7	26.6
			1/29	145	52.5	35.3	34.4
#Stevens Pass Sand Shed	21B45	3700	10/30	0	0.0	0.0	--
			11/30	28	8.6	--	--
			12/14	58	17.5	5.2	--
			12/31	91	25.3	11.4	--
			1/18	88	30.2	15.4	--
			1/29	110	40.1	25.0	--

SKAGIT RIVER

Beaver Creek Trail	21A4	2200	1/28	65	22.2	8.6	--
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Not located directly on this drainage

* Adjusted 1953-67 average

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	No.	Elevation				Last Year	Average $\frac{+}{-}$
<u>SKAGIT RIVER (Cont.)</u>							
Beaver Pass	21A1	3680	1/28	95	36.3	21.7	--
Brown Top Ridge +	21A28a	6000	Late Report			29.6	--
#Cloudy Pass +	20A22a	6500	2/1	98	31.4	--	27.4*
Devils Park	20A4	5900	1/28	119	41.4	24.3	30.2*
Freezeout Cr Trail	20A1	3500	Late Report			9.4	--
Freezeout Meadow	20A2	5000	Late Report			17.1	--
#Harts Pass	20A5A	6500	1/27	134	44.6	26.0	28.2*
Klesilkwa	Canada	3700	2/2	45	17.5	9.1	10.1**
Lake Hozomeen	21A2	2600	Late Report			--	--
#Lyman Lake	20A23A	5900	2/1	149	47.7	--	38.9*
Meadow Cabins	20A8	1900	1/27	34	11.0	4.6	--
New Tashme	Canada	2500	1/31	37	15.1	7.6	7.9**
#Rainy Pass	20A9	4780	1/28	129	39.8	22.4	27.5*
Thunder Basin	20A7	4200	1/28	71	23.3	--	--

BAKER RIVER

Baker Pass +	21A27a	4900	Note Measured			32.0	--
			Late Report			47.1	--
Dock Butte +	21A11A	3800	12/4	76	15.2	--	--
			12/18	94	23.5	--	--
			1/3	112	33.6	--	--
			Not Measured			20.8	--
			Late Report			31.9	--
Easy Pass +	21A7A	5200	12/4	58	11.6	--	--
			12/18	90	22.5	--	--
			1/3	120	36.0	--	--
			Not Measured			--	--
			Late Report			43.3	59.0*
Jasper Pass +	21A6A	5400	12/4	86	17.2	--	--
			12/18	144	36.0	--	--
			1/3	168	50.4	--	--
			Not Measured			39.0	--
			Late Report			58.5	68.5*
Marten Lake +	21A9A	3600	12/4	76	15.2	--	--
			1/3	120	36.0	--	--
			Not Measured			29.8	--
			Late Report			44.8	56.4*
Mt. Blum +	21A18a	5800	12/4	45	9.0	--	--
			12/18	64	16.0	--	--
			1/3	90	27.0	--	--
			Not Measured			15.4	--
			Late Report			34.2	--

Not located directly on this drainage

** Average for years of record

* Adjusted 1953-67 average

+ Snow water equivalent estimated from aerial stadia observation

APPENDIX 14

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average ††

BAKER RIVER (Cont.)

#Panorama New	21A26	4300	1/16	157	54.3	28.6	--
			1/30	154	73.3	39.7	--
Rocky Creek	21A12A	2100	12/18	47	11.8	--	--
			1/3	75	22.5	--	--
			Not Measured			8.6	--
			Late Report			12.2	19.6*
Schreibers Meadow	21A10A	3400	12/4	55	11.0	--	--
			12/18	89	22.2	--	--
			1/3	117	35.1	--	--
			Not Measured			20.8	--
			Late Report			32.7	42.5*
S. F. Thunder Creek	21A14A	2200	12/18	12	3.0	--	--
			1/3	33	9.9	--	--
			Not Measured			1.9	--
			Late Report			3.0	4.6*
Watson Lakes	21A8A	4500	12/18	90	22.5	--	--
			1/3	116	34.8	--	--
			Not Measured			21.8	--
			Late Report			30.4	46.0*

NOOKSACK RIVER

Panorama New	21A26	4300	1/16	157	54.3	28.6	--
			1/30	154	73.3	39.7	--

OLYMPIC PENINSULADUNGENESS RIVER

Deer Park	23B4	5200	1/27	66	21.9	13.3	16.3*
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MORSE CREEK

Cox Valley	23B14	4500	1/29	114	42.7	23.1	--
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ELWHA RIVER

Hurricane	23B3	4500	1/28	73	24.0	10.5	17.5*
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Not located directly on this drainage

* Adjusted 1953-67 average

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	No.	Elevation				Last Year	Average ††

SKOKOMISH RIVER

Black & White	23B7	4200	1/1	106	29.8	11.9	--
			1/28	116	46.5	19.1	29.0*
Black & White Lakes	23B6	4700	1/1	135	43.0	25.1	--
			1/28	153	65.0	38.2	41.5*
Four Streams	23B10	3000	1/1	98	28.1	9.4	--
			1/28	100	41.1	13.9	--
Home Sweet Home	23B5	5200	1/1	168	52.7	28.2	--
			1/28	196	74.0	39.8	54.8*
Sundown Pass	23B8	3900	1/1	149	48.0	--	--
			1/28	175	67.6	35.0	--

NOOKSACK RIVER

Glacier Creek	21A23	3700	12/2	27	4.9	--	--
			12/28	35	10.3	--	--

* Adjusted 1953-67 average

Agencies Assisting with Snow Surveys

GOVERNMENT AGENCIES

Canada:

Department of Lands, Forests and Water Resources,
Water Resources Service, British Columbia

States:

Washington State Department of Ecology
Washington State Department of Natural Resources

Federal:

Department of the Army
Corps of Engineers
U. S. Department of Agriculture
Forest Service
U. S. Department of Commerce
Weather Bureau
U. S. Department of the Interior
Bonneville Power Administration
Bureau of Reclamation
Geological Survey
National Park Service

PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

OTHER PUBLIC AGENCIES

Okanogan Irrigation District
Wenatchee Heights Irrigation District

MUNICIPALITIES

City of Tacoma
City of Seattle

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

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with the Snow Survey"*